

## **Aquatic Species and Associated Habitat**

### **Existing Condition**

An aquatic Biological Evaluation was completed as part of this analysis. The entire Biological Evaluation is incorporated by reference and is located in the project record, located at the Hood River Ranger District. The analysis and conclusions of the Evaluation are summarized below.

### **Watershed Description**

The headwaters of three streams are within the boundaries of The Dalles Watershed Hazardous Fuels Reduction Project. For this document the analysis area encompasses all areas that would be directly or indirectly affected by the proposed action. This would include portions of all three streams that are within or near treatment unit boundaries upstream of the eastern project boundary (T2S, R11E, Sec. 16). Alder Creek, Crow Creek, and South Fork Mill Creek, all 7<sup>th</sup>-field watersheds, originate from springs within the project boundary. There are several treatment units along the northern project boundary, which fall into the North Fork Mill Creek 7<sup>th</sup>-field watershed; however, the creek itself does not fall inside of or within 300 feet of any treatment areas. The analysis area will include segments of North Fork Mill Creek (~RM 12) and West Fork Neal Creek (~RM 3.3 – 4.5) that are outside of any treatment areas but are along project log haul routes (see Figure 3.16). Alder, Crow, South Fork Mill, and North Fork Mill Creeks are within the Mill Creek watershed (tributary to the Columbia River), and West Fork Neal Creek is within the Neal Creek watershed (tributary to the Hood River).

### **Aquatic Species Not Addressed in this Document**

The following fish species and their habitat would not be affected by the proposed action and thus are not discussed here: Columbia River bull trout, Lower Columbia River Chinook salmon, Lower Columbia River coho salmon, Middle Columbia River steelhead trout, Lower Columbia River steelhead trout, and rainbow trout in South Fork Mill Creek. A detailed description of their distribution relative to the analysis area is found in the Aquatic Species analysis in the project file.

### **Aquatic Species Residing within the Analysis Area**

No fish species listed as threatened, endangered, proposed, or sensitive are known to be present in streams within the analysis area. Two aquatic mollusk species, one of which is sensitive, could be present within the analysis area. There are two management indicator species within the planning area that will be discussed.

### **Management Indicator Species (Salmonids)**

Cutthroat trout (*O. clarki*), likely the coastal variety, a Management Indicator Species (MIS) under the Mt. Hood National Forest Land and Resource Management Plan (1990), are present in Alder, Crow, South Fork Mill, North Fork Mill, and West Fork Neal Creeks to their headwaters. Cutthroat trout and resident rainbow trout (*O. mykiss*), also MIS, are present in West Fork Neal Creek within the fisheries analysis area.

Salmonids known to be present in Alder, Crow, and South Fork Mill Creek (above Mill Creek Falls) include only cutthroat trout. Mt. Hood Forest Service personnel observed cutthroat trout while electroshocking and made ocular observation of salmonids during surveys in Alder Creek from RM 1.5 to RM 1.7; in Crow Creek up to RM 4.8; in South Fork Mill Creek up to RM 16.3

(Mt. Hood National Forest, unpublished data, USFS 1999a). Stream surveyors also observed cutthroat trout during their survey of Crow Creek (USFS 1998b) and up to river mile 1.8 of Alder Creek which is above the culvert on Forest Road 1721 (USFS 1998a). Forest Road 1721 was identified as a fish passage barrier during a 2000 survey resulting in a fragmented population of cutthroat in Alder Creek (USFS 2000b).

The Dog River aqueduct augments streamflows and may act as a corridor for fish passage from the East Fork Hood River watershed. The aqueduct is not screened and removes virtually all of the water from Dog River. Fish studies to date have not definitively identified whether trout found in Alder, Crow or South Fork Mill are native or whether they have been genetically mixed with Dog River cutthroats, as there is a potential for fish from Dog River to enter South Fork Mill Creek (see Habitat Conditions, below).

Salmonids known to be present in West Fork Neal Creek within the analysis area include resident coastal rainbow, cutthroat, and possibly a naturalized population of brook trout (*S. fontinalis*). Mt. Hood National Forest Service personnel discovered cutthroat trout during electroshocking surveys in West Fork Neal Creek from RM 7.0 to the headwater forks (Mt. Hood National Forest, unpublished data, Figure 3.16). Stream surveyors observed salmonids, likely cutthroat trout, throughout their survey from RM 2.3 to the headwaters at RM 8.8, and they appeared to be more abundant above a section of dry channel located between RM 5.9 and 6.4 (USFS 1999b). Fish studies to date have not definitively genetically identified whether trout found in the headwaters are cutthroat or rainbows. For this analysis, it is assumed that fish present in the analysis area could be either cutthroat or rainbow trout (see Figure 3.17).

Fish present in North Fork Mill Creek within the analysis area include coastal cutthroat trout. Electroshocking surveys indicate cutthroat trout and possibly rainbow trout reside in North Fork Mill Creek from the mouth to the headwater forks (Mt. Hood National Forest, unpublished data, Figure 3.16). Field staff from the Mt. Hood National Forest noted there appeared to be “cutthroat-rainbow hybrids” in the headwater forks (Mt. Hood National Forest, unpublished data). The presence of cutthroat trout populations above the limits of anadromous fish use is a common pattern of species distribution in watersheds in this area (Steve Pribyl, ODFW, personal communication). It is the professional opinion of the Hood River and Barlow Ranger District zone fisheries biologist that salmonids in North Fork Mill Creek upstream from the Mt. Hood National Forest boundary are predominantly cutthroat trout (Gary Asbridge, USFS, personal communication). Further genetic analysis is warranted to determine the salmonid species observed by surveyors in the headwaters of North Fork Mill Creek. For this analysis, resident rainbow trout presence is suspected in North Fork Mill Creek where steelhead distribution is known or suspected (map in Appendix A).

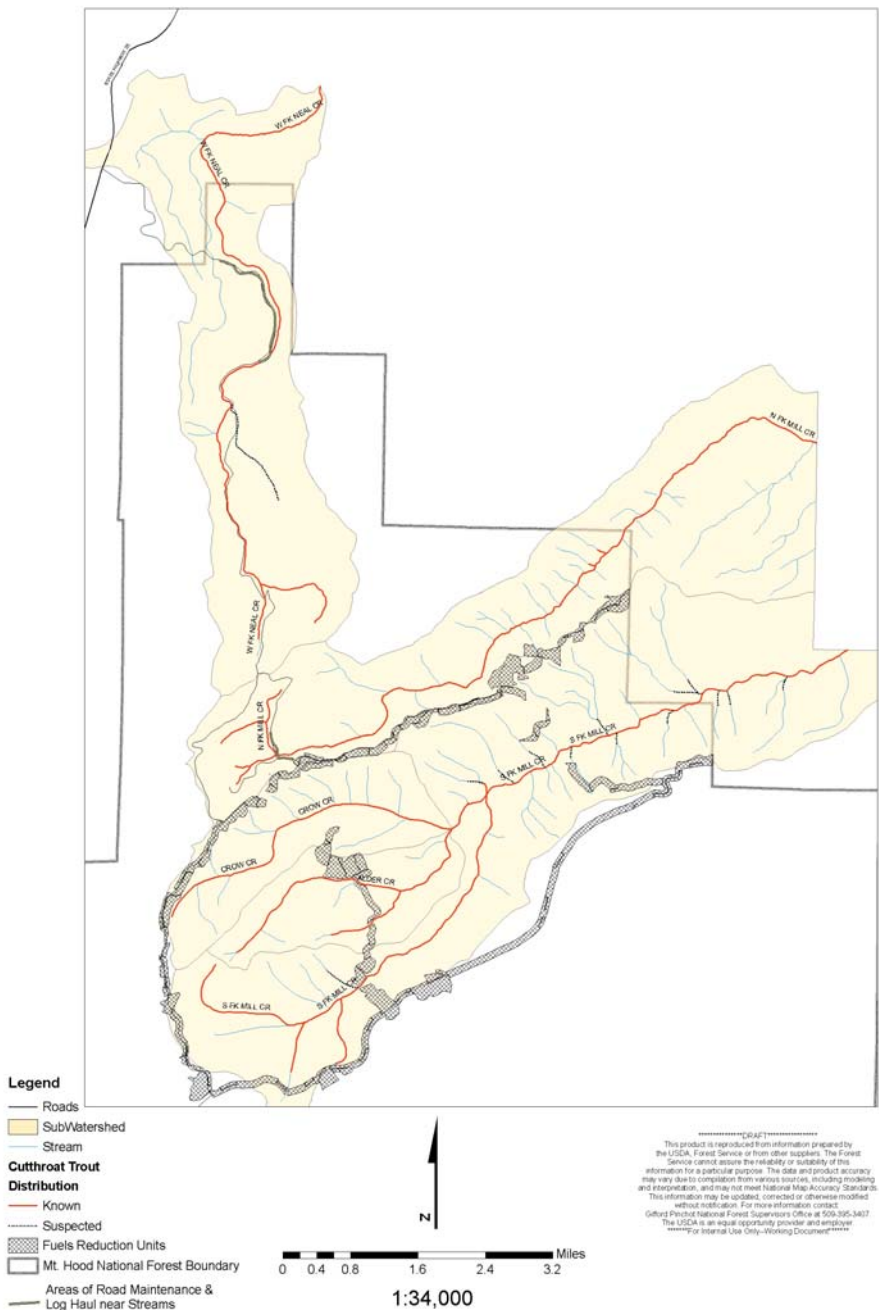


Figure 3.16. Distribution of cutthroat trout within Alder Creek, Crow Creek, South Fork Mill Creek, North Fork Mill Creek, and West Fork Neal Creek in relation to The Dalles Watershed Hazardous Fuels Reduction Project treatment areas and haul routes.

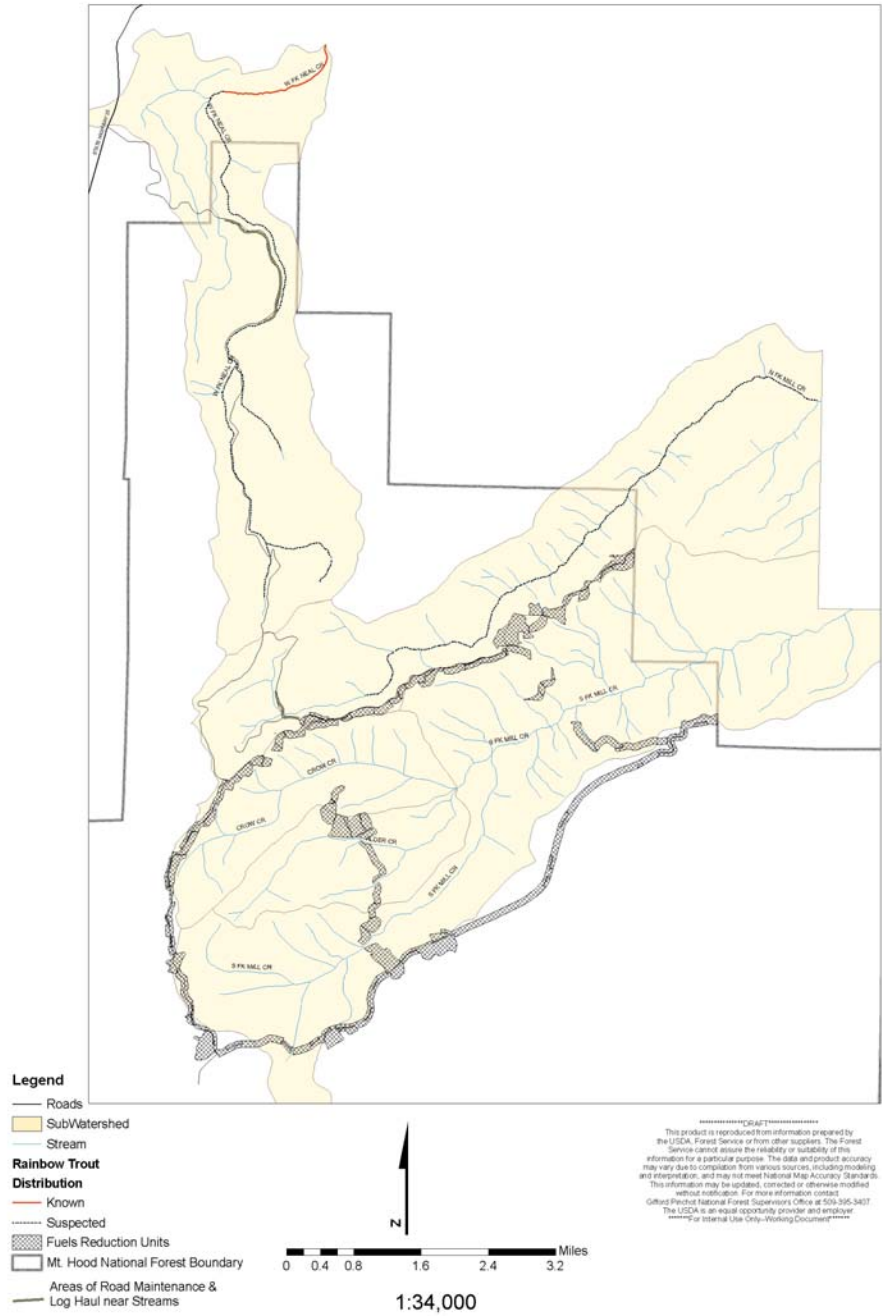


Figure 3.17. Distribution of rainbow trout within Alder Creek, Crow Creek, South Fork Mill Creek, North Fork Mill Creek, and West Fork Neal Creek in relation to The Dalles Watershed Hazardous Fuels Reduction Project treatment areas and haul routes.

### **Sensitive and Survey and Manage Aquatic Mollusks**

#### **Columbia Dusksnail (*Lyogyrus* n. sp. 1)**

There is one species of sensitive aquatic mollusk (listed on the Forest Service, Pacific Northwest Region Sensitive Species list) that may reside in streams and wetlands within the analysis area. This snail is also a Survey and Manage species under the Northwest Forest Plan. Columbia dusksnail occurs in cold, well oxygenated perennial springs and spring outflows in shallow, slow-flowing areas. Most of the Columbia dusksnails found on the forest have been found in slow, clear, cold (<14 Celsius) water of small systems, such as springs, spring outflows and headwater tributaries. The substrate of site ranges from silt to cobble, and there seems to be a strong association with aquatic moss, especially *Fontinalis*. Often the snails are on the “fronds” of this moss in the sample area. There doesn’t appear to be an association with other aquatic macrophytes. Individuals have not been found in larger streams and rivers, or glacial streams.

This species of aquatic mollusk has been found across the Forest during surveys conducted over the past several years (Mt. Hood National Forest, unpublished data). Surveys for the Columbia dusksnail have been conducted for a wide range of projects. Surveyors in South Fork Mill Creek and West Fork Neal Creek and in nearby Mosier Creek found the Columbia dusksnail. It is possible that the snail is present in the Crow Creek, Alder Creek, and North Fork Mill watersheds due to the similarity of habitat among these headwater streams.

#### **Basalt Juga (*Juga Oreobasis* n. sp. 2)**

The basalt juga, a Survey and Manage Species, occurs sporadically in small, shallow, undisturbed perennial springs and small seeps that flow into the Columbia River. It prefers gravel substrates where *Rorippa* (water cress) is usually present. Occupied springs are often surrounded by basalt talus. The basalt juga has only been found at two locations within the Oregon portion of the Columbia River Gorge National Scenic Area: in Canyon Creek just west of the town of Hood River and in several small seeps just above (south) Interstate 84 about a half-mile east of The Dalles Dam. Individuals have been found at several locations on the Washington side of the Scenic Area and east of the Scenic Area on both sides of the river. They have never been found in any survey conducted on the Mt. Hood National Forest, and they are not believed to reside in Forest streams. Their habitat requirements are similar to the Columbia dusksnail: cold, well-oxygenated springs, seeps, and small streams.

The 2001 Survey and Manage Record of Decision (Standards and Guidelines, page 22) gives some flexibility to survey for these species – “The line officer should seek specialists’ recommendations to help determine the need for a survey based on site-specific information. In making such determination, the line officer should consider the probability of the species being present on the project site, as well as the probability that the project would cause a significant negative effect on the species habitat or the persistence of the species at the site.” (USFS & Bureau of Land Management, 2001).

Surveys for the two survey and manage aquatic mollusks was not conducted as part of this project, even though the Columbia dusksnail is known to occur in many streams on the district including those within the proposed project area. Because the species were found in South Fork Mill Creek and nearby streams, it is likely present in Crow, Alder, and North Fork Mill Creek. Riparian reserve standards and guidelines and project design criteria are sufficient to provide for the habitat needs of this species. Anticipated effects of implementing the action alternatives

would not significantly affect habitat or species persistence at each site, and thus the line officer decided to not conduct surveys throughout the analysis area.

### **Habitat Conditions**

This analysis will only address habitat components that would be potentially impacted by the proposed action. These components include large woody debris (LWD), pool quantity and quality, substrate, and water temperature.

#### **Alder Creek**

The Forest Service conducted a Level II stream survey on Alder Creek in 1998 from its mouth to river mile 3.2. It is assumed that conditions documented in the 1998 Forest Service survey have not changed, as no substantial human activity or natural events have occurred since the 1998 survey was conducted. Habitat conditions in Alder Creek are characterized by a lack of LWD and pool habitat. Alder Creek currently does not meet the Mt. Hood National Forest Plan (Forest Plan) Standards and Guidelines for LWD. The Columbia River Basin Anadromous Fish Project Implementation Guide (PIG) Standards and the National Marine Fisheries (NMFS) standards were met for LWD. Alder Creek currently does not meet Forest Plan, PIG, and NMFS standards for pool frequency. There were no primary pools (pools  $\geq 3$  feet deep) in the reach. However, pool numbers overall were low (only 152 pools were found in the entire 3.2 river mile survey). Alder Creek has low to intermittent flow for the majority of the year and in general, would not be expected to form deep pools in large numbers. Gravel was the dominant substrate. Fine substrate was observed in sections of dry channel where the water had slowed, dried, and deposited fines. This sedimentation would likely be flushed out during higher flows. No bank instability was observed during the survey (USFS 1998a).

#### **Crow Creek**

Crow Creek is the largest tributary to South Fork Mill Creek and its headwaters originate in a spruce-cedar timber stand from a spring entering from the valley slope. The Mt. Hood National Forest Service conducted a Level II stream survey on Crow Creek in 1998 from its mouth at Crow Creek Reservoir to the headwaters (river mile 5.0). It is assumed that conditions documented in the 1998 Forest Service survey have not changed, as no substantial human activity or natural events have occurred since the 1998 survey was conducted. Habitat conditions are characterized by a lack of LWD and pool habitat. There were two primary pools (pools  $\geq 3$  feet deep) in the reach, and pool numbers overall were low (only 246 pools were found in the entire 5.0 river mile survey). Crow Creek currently does not meet the LRMP Standards and Guidelines for LWD. The PIG and NMFS standards were met for LWD. Crow Creek currently does not meet LRMP, PIG, and NMFS standards for pool frequency. Moderate gradient and low flows would not promote the formation of deep pools. Gravel was the dominant substrate but some sedimentation was observed associated with debris jams and surface flow areas (USFS, 1998b).

#### **South Fork Mill Creek**

South Fork Mill Creek originates east of Surveyor's Ridge. The creek receives 95 percent of its flow from the Dog River diversion and flows approximately 15.3 miles before nearly all of the water is diverted out of the channel supply water for The Dalles. The Forest Service conducted a level II stream survey on South Fork Mill Creek 1999 from the Forest Service boundary (RM 8.4) to the headwaters (RM 16.3). It is assumed that conditions documented in the 1999 Forest

Service survey have not changed, as no substantial human activity or natural events have occurred since the 1998 survey was conducted. Habitat conditions are characterized by a lack of LWD and pool habitat. There were only 17 primary pools (pools  $\geq$  3 feet deep) in the two reaches, but pool numbers overall were low (only 313 pools were found in the entire 7.5 river mile survey). South Fork Mill Creek currently does not meet the LRMP, PIG and NMFS standards for LWD or pool frequency. Small flow would not promote the formation of primary (depth greater than 3 feet) pools. Gravel/cobble was the dominant substrate (USFS 1999a).

See the watershed resources section for water temperature summaries for Alder, Crow, and South Fork Mill Creeks.

### **West Fork Neal Creek**

From RM 2.3 – 8.8, fish habitat conditions in West Fork Neal Creek are characterized by a lack of large woody material (LWM), pool habitat and a relatively large amount of fine substrate. The majority of the wood in the stream was in the small size category. Pool numbers were low and only two pools were greater than three feet deep. This reach has a large amount of sand/silt substrate (27%) (USFS 1999b).

### **North Fork Mill Creek**

Compared to West Fork Neal Creek, habitat conditions for most of North Fork Mill Creek, at least within the Mt. Hood National Forest, are better. The amount of pool habitat and LWM was generally higher, at least downstream from the headwater meadows. Deep pools were not abundant but also would not be expected given the small size of the stream. Reach 2 (the headwaters) has a large amount of sand/silt substrate (44%).

Water temperature data has been collected by the Forest Service on West Fork Neal Creek since 1994 and North Fork Mill Creek since 1999. The West Fork Neal Creek site is at the new Mt. Hood National Forest boundary (RM 7.0) and the North Fork Mill Creek site is at RM 9.5. Water temperatures in West Fork Neal Creek and North Fork Mill Creek on National Forest System lands are generally quite cool, rarely exceeding NOAA Fisheries steelhead criteria for properly functioning and meeting State of Oregon water quality standards (17.8 °C). Seven-day average maximum temperatures did exceed the properly functioning threshold of 13.9 °C in both creeks, usually in mid-summer, for 3-18 days depending on the creek and year. None of the days when this threshold was exceeded occurred during the spawning period, all were within the migration and rearing period. Handheld thermometer readings taken in West Fork Neal Creek in the headwaters during the 1999 stream survey exceeded 20 °C and could be cause for concern (USFS 1999b).

## **Environmental Effects**

### **Alternative 1—No Action Alternative**

#### **Direct, Indirect, and Cumulative Effects**

Water quality and habitat conditions would likely maintain their current trend without thinning activities. As stated in the watershed resources section, water quality parameters such as stream temperature and sediment are not expected to appreciably change in the project area, although a

high severity burn could increase both turbidity and stream temperature. Although it is difficult to predict exactly where and to what extent a potential fire would burn in the South Fork Mill watershed, aquatic species could be affected by a severe burn in riparian areas. Depending on the amount, fine sediments (ash or soil erosion resulting from the burning of vegetative ground cover) could cover spawning gravels and/or food-producing riffle areas. Survival of cutthroat trout embryos declines rapidly as the amount of sediment <6mm in diameter increases beyond 10-15% of the total. Similarly, large quantities of fine sediments resulting from a severe fire could have a negative effect on aquatic mollusk habitat and could impact potential populations within seeps and streams in and downstream of the burned area. If water temperatures increase, coastal cutthroat spawning and egg incubation could be negatively affected, and temperatures exceeding 22°C place the fish at risk for mortality (Bjornn and Rieser 1991). Still, although there may be detrimental impacts to aquatic species if a severe fire occurs within the analysis area, it is impossible to specify the level of impact given the multiple fire scenarios that could take place. Thus, the no action alternative is assumed to have no impact on aquatic species.

If no action is taken in riparian reserves, stands may have a reduced capability to produce the size and quantity of large woody debris sufficient to sustain physical complexity, including pools, and stability of the riparian reserves and associated streams.

### **Alternative 2 – Proposed Action** **Direct Effects and Indirect Effects**

The primary direct impacts to cutthroat trout and their habitat within the project boundary include the following:

- Short-term loss of recruitment for small, and medium size classes of large woody debris.
- Immeasurable short-term increases in sediment.

#### *Large Woody Debris (LWD)*

No vegetation removal or manipulation would occur within 50 feet of all perennial and intermittent streams, seeps, springs, or wetlands. Some trees would be removed from the riparian reserves, as hand treatment would occur in the area 50-100 feet from streams or wet areas. Harvesting trees within riparian reserves has the potential to affect the future recruitment of LWD into the stream channels and riparian areas. Trees that are proposed to be removed fall within the small and medium size wood class. Small pieces are not considered under Forest Plan, PIG, and NMFS standards for LWD. Because there would not be any cutting or fuels treatment within 50 feet of stream channel the amount of potential in stream medium LWD that would be removed is minimal. Trees in the medium size class are 12 to 19.9 inches in diameter and would be approximately 65 to 90 feet tall (Pam Maylee, personal communication). It is likely that these would be short-term effects and in the longer term these features would actually be improved. Thinning would release larger conifers, reduce species competition and increase future large woody material recruitment into the stream channel. LWD recruitment for streams within the analysis area is not expected to be affected by this project.

#### *Pool Quantity and Quality*

Factors that affect pool quality and frequency include changes in LWD, peak or base flows, or sediment regimes. Thinning in the Riparian Reserves is expected to improve LWD recruitment potential and increase quality pool formation in the long-term. The action would not affect pool depths because there is little likelihood of detectable fine sediments entering stream within the



project area. The action would not create a measurable increase in base or peak flows. The proposed action has a low probability of affecting pool habitat.

### *Sediment*

Project activities that have the potential to affect the sediment/turbidity and substrate include timber yarding, use of skid trails and landings, fuels treatments (underburning and burning piles), road building and road improvement, and log hauling. Fuel treatment activities may have a short-term potential to indirectly introduce fine sediment into the stream channels from surface erosion and run-off. Project activities are not anticipated to change long-term substrate composition within any of the streams that flow through the project's treatment areas or that are along haul routes as required mitigation measures would make it unlikely that any material would reach aquatic systems (see Soil Productivity and Watershed Resources sections). Project design criteria such as no entry protection buffers along riparian areas where thinning is proposed, restrictions on ground disturbance, and no yarding through streams or wet areas reduce the risk of sediment input into streams.

The sections of road that would undergo road maintenance have not been maintained for at least ten years due to lack of funding, and are already likely contributing sediment to North Fork Mill Creek and West Fork Neal Creek, respectively. Drainage maintenance may contribute some sediment to the streams for one-to-two years after completion, but measures would be taken to minimize the amount of sediment that enters the streams (straw bales and waddles). Adherence to project design criteria and mitigation measures and General Best Management Practices (BMPs) would reduce the risk of erosion causing habitat degradation within or downstream of the analysis area. Also, improvement of these road segments would likely ultimately reduce sediment contribution over the long term. This project would not alter long-term sediment composition and thus would not affect habitat or individuals in cutthroat trout, rainbow trout, or aquatic mollusk populations that may be present in the analysis area.

### *Temperature*

Stream protection buffers have been established as 50 feet in width along all streams and wet areas. No-harvest stream protection buffers would ensure that shade-producing vegetation would remain within the primary shade zone, thus current stream shading and water temperatures would be maintained. The thinning prescriptions within riparian reserves but outside protection buffers would maintain an average of 60 percent canopy cover closure in order to retain shade-producing vegetation within the secondary shade zone. This project design is expected to maintain a canopy closure that provides adequate shade cover over streams and therefore is unlikely to alter water temperatures (see Hydrology section). Fish or mollusks that reside in the creeks within the project area would not experience changes in stream temperatures as a result of the project activities.

### **Cumulative Effects**

The cumulative effect analysis area for effects to aquatic species includes Alder Creek, Crow Creek, South Fork Mill Creek, North Fork Mill Creek, and West Fork Neal Creek watersheds. See the Watershed Resources section (Table 3-22) which provides a detailed description of all activities which could cumulatively affect specific aquatic habitat components (suspended sediment, stream temperature, and water quality). The only measurable cumulative effect is sedimentation in West Fork Neal Creek caused by the Long Prairie Grazing Allotment in

association with other activities, including tree salvage, invasive plant treatments, and road maintenance for the proposed action. This sedimentation would have no detrimental cumulative effects to (see Watershed Resources section) and thus would have no affect on cutthroat or rainbow trout or aquatic mollusks in West Fork Neal Creek.

Timber harvest took place in the South Fork Mill watershed starting in the 1880s. No baseline data exists for the streams or riparian conditions before harvests began in the watershed. As stream surveys conducted recently on the streams indicate, fish habitat conditions are below thresholds established by NMFS and the Forest Plan for large woody debris and pools quality. It is not possible to correlate a long history of timber harvest in the area with the low pool quality habitat. Several timber sales have taken place in the watershed and numerous roads and skid trails were built to remove the timber. The project would have no cumulative effects on LWD or pool quantity and quality.

## **Effects Determination**

### **Essential Fish Habitat**

When the Magnuson-Stevens Act (MSA) of 1976 was re-authorized in 1996, it directed Regional Fishery Management Councils to identify Essential Fish Habitat (EFH) for commercial fish species of concern. Effect analysis contained here and in the Biological Evaluation address potential effects to EFH for steelhead and coho. The Dalles Fuelbreak is not expected to adversely affect fish habitat in the Mill Creek Basin. Three salmonid species are identified under MSA: Chinook salmon, coho salmon, and Puget Sound pink salmon. These species are not present in the project area or action area of the proposed action. The proposed action would have No Effect on EFH for any of these species as designated under the 1996 amendment to the MSA.

### **Sensitive and Survey and Manage Aquatic Species**

The no action alternative for The Dalles Watershed Hazardous Fuels Reduction Project would not affect coastal cutthroat or rainbow trout or their habitat. A **No Impact (NI)** determination is warranted for the proposed action for the Columbia dusksnail.

The implementation of the proposed action for The Dalles Watershed Hazardous Fuels Reduction Project would not affect coastal cutthroat or rainbow trout or their habitat. A **No Impact (NI)** determination is warranted for the proposed action for the Columbia dusksnail.

<b>Table 3.23. Threatened, Endangered, and Sensitive Fish and Aquatic Mollusk Species</b>					
	Date of Listing	Suitable Habitat Present	Species Present	EFFECTS OF ACTIONS Alternatives	
<b><u>Endangered Species Act Listing by ESU</u></b>				<b><i>No Action</i></b>	<b><i>Action</i></b>
Lower Columbia River steelhead & CH ( <i>Oncorhynchus mykiss</i> )	3/98 1/06	No	No	NE	NE
Lower Columbia River chinook & CH ( <i>Oncorhynchus tshawytscha</i> )	3/99 1/06	No	No	NE	NE
Columbia River Bull Trout ( <i>Salvelinus confluentus</i> )	6/98	No	No	NE	NE
Middle Columbia River steelhead & CH ( <i>Oncorhynchus mykiss</i> )	3/99 1/06	No	No	NE	NE
Lower Columbia River coho ( <i>Oncorhynchus kisutch</i> )	6/05	No	No	NE	NE
<b><u>Regional Forester's Sensitive Species List</u></b>					
<b><u>Survey and Manage</u></b>					
Interior Redband Trout (*) ( <i>Oncorhynchus mykiss spp.</i> )	7/04	Yes	No	NI	NI
Columbia dusky snail (*,+) ( <i>Lyogyrus n. sp. 1</i> )	7/04 1/01	Yes	Unk	NI	NI
Basalt Juga (+) ( <i>Juga oreobasis n. sp .2</i> )	01/01	Yes	Unk	NI	NI

Endangered Species Act Abbreviations/ Acronyms: NE = No Effect; NLAA = May Affect, Not Likely to Adversely Affect; LAA = May Affect, Likely to Adversely Affect. Essential Fish Habitat Abbreviations/ Acronyms: NAA = Not Adversely Affected; AE = Adverse Effects. Regional Forester's Sensitive Species List\* and Survey and Manage + Abbreviations/ Acronyms: Unk = Species presence unknown but suspected; NI = No Impact; MIH = May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species.

## Transportation System

A more detailed Transportation Report is located in the project record, located at the Hood River Ranger District. The analysis and conclusions of the report are summarized below.

### Existing Condition

The road system for this planning area consists of 59.09 miles of system classified Forest Development Roads. The 1720000, 1700, 1700014, 1700660, 1700662, 1700680, 1720193 and 1711630 provide access to the perimeter of the project and are available for public travels except for roads with winter recreation closures. Interior roads 1720190 and 1720192 would also be accessed for the fuelbreak project; these roads are within the municipal watershed and are closed by locked gate or are behind a locked gate.

Roads are a mix of asphalt, gravel, and native surface. Existing road drainage consists of ditch to culverts or insloped or outsloped surface to draindips or berms.

Roads within the planning area provide access for administrative, public, and commercial users. They access the Dog River pipe irrigation ditch, Knebal Springs Campground, Surveyor's Ridge trailhead, Shellrock pit, a portion of trails and a day use area. The roads also provide access for the administration of the municipal watershed for The City of The Dalles. Many of the roads are used during winter for winter recreation, primarily as snowmobile trails. Roads in the planning area provide for timber haul and firewood removal. Entry to the public is prohibited inside the watershed.

Limited road maintenance dollars have resulted in a backlog of road maintenance. Consequently, many of the roads are brushed-in, drainages have become non-functional, and road surfaces need repair. Lack of maintenance negatively affects safety for the users, and can increase the potential for damage and loss of road structure and higher levels of sedimentation. Brushed-in roads reduce visibility for safe driving. Failed drainages increase the risk of road damage and can cause water to flow over the road, resulting in sediment entering creeks. Damaged road surfaces such as pot holes, ruts, washboards, breached water bars and pavement cracking, can be obstacles to drivers, add sediment into creeks, and increase the rate of degradation of the road infrastructure.

#### **Methodology—Haul Route Analysis**

Roads were evaluated for three different seasons of haul: wet operation season, normal operating season and dry operating season. Given the existing conditions and life expectancy of roads, wet season haul would not protect the integrity of existing roads. A cost analysis to reconstruct main haul roads to withstand the wet operating season are economically prohibitive and beyond the financial capability of this project or any road maintenance or reconstruction funding source available to the Forest Service. The roads in the planning area were designed for hauling timber during the normal operating season, generally June through October (see December 18, 1989 extended season haul policy). Therefore, the proposed action was analyzed for the normal operating season haul. Soil moisture in the subgrade must be below its plastic limit to meet this design parameter.

All roads were evaluated for their current structural capacity to determine maintenance and reconstruction needed to meet the current designated maintenance levels and protect the residual value of the road.

The following table is the list of roads consisting of the primary haul routes along with the approximate length of each segment that would be used for haul. The table includes four categories for maintenance and reconstruction work that are recommended to be accomplished prior to commercial haul. The majority of the work would be accomplished with standard road maintenance specifications. Specifically the brushing, drainage maintenance and routine blading would be maintenance specifications. Deep patching, patching and reconditioning of aggregate surface roads would use standard construction specifications. All work would be within the existing road structure.

**Table 3-24. Primary Haul Routes: Maintenance and Reconstruction Needs**

Road	Miles	Brushing	Drainage	Surface	Blading
<b>1700000</b> From mp 0.00 to mp 15.51	15.51				
Brushing		X			
Drainage			X		
Surface Patch & deep patch				X	
Aggregate replacement				X	X
<b>1720000</b> From mp 0.00 to mp 7.89	7.89				
Brushing		X			
Drainage			X		
Surface Patch & deep patch				X	
<b>4400000</b> From mp 0.00 to mp 5.14	5.14				
Brushing		X			
Drainage			X		
Surface Patch				X	
<b>1721000</b> From mp 0.00 to mp 5.88	5.88				
Brushing		X			
Drainage			X		
Surface				X	X
<b>1700660</b> From mp 0.00 to mp 2.30	2.30				
Brushing		X			
Drainage			X		
Surface					X
<b>1700662</b> From mp 0.00 to mp 3.10	3.10				
Brushing		X			
Drainage			X		
Surface					X
<b>1720190</b> From mp 0.00 to mp 1.75	1.75				
Drainage		X			
Brushing			X		
Blading					X
<b>1720192</b> From mp 0.00 to mp 1.54	1.54				
Drainage		X			
Brushing			X		
Blading					X
<b>1720193</b> From mp 0.00	2.20				

Road	Miles	Brushing	Drainage	Surface	Blading
to mp 2.20					
Drainage		X			
Brushing			X		
Blading					X
<b>Total Miles</b>	<b>45.31</b>				

### Effects Analysis

Activities related to timber sales affecting the transportation system include: log haul, snow plowing, temporary road construction, reconstruction, road maintenance, access, and danger tree removal. These relationships/effects will be discussed for the no action and the proposed action.

#### Alternative 1—No Action

##### Direct and Indirect Effect

The no action alternative would not involve log hauling, temporary road construction, road reconstruction, snow plowing, or timber sale related road maintenance. This alternative would not change the use pattern of roads, correct existing road erosion problems, or correct ineffective road closures. Even with normal traffic, road damage is likely to occur. Individual danger trees would continue to be removed as they are identified. These trees would continue to be available for the firewood program.

##### Cumulative Effects of the No Action Alternative

Road use, access, reconstruction and maintenance would be reduced. Timber sales from the adjacent planting areas would continue independent of the fuelbreak project. The road system would continue to deteriorate, increasing the backlog of maintenance and create higher reconstruction cost for future projects. The reduction of maintenance and reconstruction would have a negative effect on safety to the traffic, an increased negative impact to soil movement and water quality.

#### Alternative 2—The Proposed Action

##### Direct and Indirect Effects

The proposed alternative would involve log haul. Log Haul has the most critical effect on the transportation resource. The amount of moisture present in the subgrade or base course is a concern. Past commercial haul during wet conditions of the base and subgrade have weakened the structural capacity of aggregate surfaced as well as asphalt surfaced roads. Even with normal traffic, road damage is likely to occur. With heavy vehicles, and saturated base and subgrade the damage would be accelerated.

Hauling during freeze/thaw conditions has damaged the surface and base materials. As frost penetrates the road prism, it pulls moisture up into the subgrade and base course material, saturating the subgrade. When the moisture in the subgrade and base course freezes, the ice expands, pushing soil and rock particles apart. This action reduces the compaction in the subgrade and base course, which in turn reduces the structural capacity of the road. During this freeze/thaw condition, moisture content normally reaches the saturated condition leaving the

base and subgrade in a weakened condition. During this period, an 80,000 pound legally loaded truck will produce five times or more stress on the travelway than it would produce during optimum moisture conditions for the base and subgrade.

Plowing snow for winter haul eliminates insulation, which allows deeper frost penetration. Plowing also stores snow along the shoulders of the road. As the snow melts, the subgrade is saturated and prolongs the time it takes for the road to dry out in the spring. Snowplowing for use would accelerate damage caused from saturated soils and freeze/thaw. It would also set up a corridor for collecting and concentrating water during rain-on-snow events that could accelerate damage to the road and drainage structures.

Access to landings from roads is an issue for traffic safety and the effect the access has to the main road. The access grade should be approximately two to eight percent. The access should have an aggregate surface for a distance that prevents tracking native materials and soils onto the main road. Asphalt roads need protection to prevent edge breaking.

Commercial haul would be prohibited when the moisture is greater than the plastic limit in the subgrade and during freeze/thaw cycles, which would mitigate damage to road surfaces during the normal operating season.

Road maintenance would occur in the proposed action. Maintenance would protect the road infrastructure, improve safety of the road, decrease sedimentation, help to protect fish and fish habitat, and reduce the spread of noxious weeds. Brushing roads increases sight distance to improve visibility for safe driving. Blading, ditch and culvert cleaning, rocking, spot rocking, resurfacing, removing and replacing barriers and water bars, corrects or improves water drainage. It may cause a temporary increase in sedimentation while the work is being done, but in the long term, it would decrease the volume and velocity of water that carries sediment into creeks. Repairing road surfaces by blading, rocking, spot rocking, resurfacing, removing and replacing barriers and water bars, pavement patching and deep patching, would reduce obstacles, reduce maintenance costs, and protect the road infrastructure. Pre-locating ditch spoils and brush disposal locations would reduce the likelihood of spreading noxious weeds. Appropriate water sources would be selected for compacting and dust abatement that assure stream flow and fish protection measures are met. Maintenance activities could cause some short-term delays or detours for road users while road work is being done.

Road density for the project area meets the Forest Plan standards and guidelines primarily due to the majority of the access being closed to public entry. All Forest System roads used for the proposed action would remain in the same maintenance level as they are currently assigned.

### **Cumulative Effects for the Proposed Action Alternative**

The planning areas that share common haul routes define the spatial area for the cumulative effects analysis. Factors considered for cumulative effects on the transportation system include log haul, road reconstruction, road density, road maintenance, and access. Planned and current active projects include Eightmile Salvage, projects that may occur in the North Fork Mill Creek planning area and the Billy Bob Fuels Reduction project. There are private timberlands that may affect the area located inside the watershed and at Camp Baldwin.

Assumptions for this analysis include: Log haul would occur during the normal operating season. All the timber sales from the above planning efforts would be completed in five to seven years. All the other timber sales would protect the roads to standard.

The Commensurate Share Policy is used to determine maintenance and reconstruction responsibilities for any project that has commercial haul. Under this policy all competing users would be assessed their commensurate share of responsibility for maintenance and reconstruction. This policy would reduce the cumulative effects of commercial haul over a similar time frame. Timber sales from the adjacent planting areas would continue independent of the fuelbreak project. With the current mitigation measures for the proposed action, there would be no unacceptable damage to National Forest System roads. Removing danger trees would increase safety for all users.

## Botanical Species

A Botanical Biological Evaluation was completed as part of this analysis. The entire Biological Evaluation is incorporated by reference and is located in the project record, located at the Hood River Ranger District. The analysis and conclusions of the Evaluation are summarized below.

### Existing Condition

Botanical surveys for Pacific Northwest Sensitive Plants and Survey and Manage botanical species have been conducted in the Mill Creek Watershed annually over the past 10 years for a variety of Forest Service projects including monitoring of sensitive plant populations. Surveys have included the search for botanical species listed as Survey and Manage under the Northwest Forest Plan, and also for some species that are known to be uncommon or rare in Oregon (according to the Oregon Natural Heritage Program), but which are not currently listed by the Regional Forester as Sensitive. Currently there are 56 sensitive and survey and manage within the range of the Mt. Hood National Forest (MHNF); pre-field review of the proposed project area found that suitable habitat might be present for 25 of these species. Presence of suitable habitat was later verified during actual field surveys (see “Results of Field Surveys” below).

### Suitable Habitat

Suitable habitat of interest generally include seeps, springs, streams, floodplains, swales, rock outcrops, meadows, grasslands, pine/oak woodlands, and mature forests 80 years and older. Habitats of particular interest in the planning area include floodplains, seeps, springs where mature western red cedar is present (especially in the vicinity of Alder Creek). There are also open pine/oak areas interspersed among rocky slopes, swales, and grasslands along the western and eastern edges of the project area along Surveyor’s Ridge and Mill Creek Ridge. Throughout the planning area there are mature stands of grand fir, Douglas-fir, western hemlock, noble fir, western larch, lodgepole pine, and ponderosa pine, between immature regeneration stands that are 15-30 years old.

### Known Sites within the Mill Creek Watershed

Three Pacific Northwest Sensitive Plant species (one also listed as Survey and Manage) are known to be present within the Mill Creek Watershed; they are all outside of the proposed project activity area; 1) *Arabis sparsiflora* var. *atrorubens* has been documented at eight sites



along Surveyor's Ridge Trail, and 2 sites on Mill Creek Ridge near the border of The Dalles Watershed, 2) *Botrychium minganense* has been documented at nine sites in riparian floodplains and springs in the northern and central areas of the watershed (3 of the sites are on private land), 3) *Lomatium watsonii* grows on an open cobble slope near Bald Butte.

### **Known Sites within ½ Mile of Project Area**

In the vicinity of proposed units near Surveyor's Ridge there is a population of the Pacific Northwest Sensitive Plant *Arabis sparsiflora* v. *atrorubens* (Sicklepod rockcress) that grows at forest edges, in rock outcrops, trailsides, roadsides, and natural grassy openings that have been disturbed by gophers and frost upheaval. Sicklepod rockcress also grows in disturbed grassy openings and near forest edges along the northeastern end of Mill Creek Ridge. *Both sites are outside of the proposed project activity areas.*

A complete description of the methodology for field surveys can be found in the Biological Evaluation for botanical species in the project file.

### **Suitable Habitat**

When surveys are conducted outside of the appropriate season for definitive identification of a sensitive or survey and manage species it is presumed that the species may likely be present where suitable habitat is present, especially when verified by the presence of commonly associated species. Suitability of habitat is primarily based on habitat details that have been documented for local sites and secondarily on habitat requirements that are identified in USFS conservation guides and species-specific management guides.

*Botrychium minganense*: There are presently 14 documented sites of *B. minganense* on the Mt. Hood National Forest; 10 of the 14 known sites are on the Hood River District and nine of the sites are in the Mill Creek Watershed. Three sites in the Mill Creek Watershed were on the Mt. Hood NF (MHNF) until the land was exchanged in the early 1990s; the sites are now on private lands in sections 31 and 36. One of the three sites was extirpated by clear-cut logging in 1998; the other two sites still exist under vine maple after the overstory of mature cedar trees was logged.

Suitable habitat for *Botrychium minganense* was found in a seep-fan area in the center of unit 20 (of the proposed fuelbreak) on a north/northeast facing slope. The presence of plant species that are known to be associated with *B. minganense* such as *Thuja plicata* (western red cedar), *Lisychitum americanum* (skunk cabbage), and other *Botrychium* species (*B. multifidum*, and *B. virginianum* - uncommon on the eastside of the MHNF, although not listed as Pacific Northwest Region Sensitive) indicates that suitable habitat is present. The site is within a reserve buffer that does not allow any project activity, including felling trees, within 50' from the edge of the seep/spring.

### **Surveys Not Conducted – Survey and Manage Fungi**

There are 18 fungi species that have potential suitable habitat in the project area. Surveys have been conducted according to survey protocol for *Bridgeopurus nobilissimus*; it was not found in the project area. Surveys are not required for the other 17 fungi species (within range of the MHNF) currently under direction of the Northwest Forest Plan because there are no survey protocols (i.e., surveys are “not practical”) (NWFP ROD, p. C-5).

## Effects Analysis

### Alternative 1—No Action

#### Direct and Indirect Effects

##### Botrychium minganense

Under the no action alternative, *B. minganense*, if present in Unit 20, would continue to respond to natural processes (such as global warming, disease, predation, wildland fire, etc.) that occur in mature forests. There is a paucity of information available to help predict how natural forest processes might affect *B. minganense* specifically if a wildland fire were to occur as a result of no action; *B. minganense* is a riparian associated species that requires a moist and humid microclimate therefore it may respond poorly however the reaction is unknown at the current time (Management Recommendations for Mingan moonwort, December 1998).

##### Arabis sparsiflora v. atrorubens

Under the no action alternative, short or long term direct and indirect effects to *A. sparsiflora v. atrorubens* and its habitat are not expected. The species and its habitat would likely continue to respond to natural processes and human activities that occur in and around the habitats over the short and long term. On the Hood River and Barlow Ranger Districts *A. sparsiflora v. atrorubens* appears to be an early seral species that recolonizes quickly in disturbed (but not compacted) soils in fire associated plant communities. The species may react favorably to fire (natural or prescribed), although it is unknown at this time.

#### Cumulative Effects of the No Action

Under the no action alternative, cumulative effects are not expected to *Botrychium minganense* or *Arabis sparsiflora v. atrorubens* because there are no foreseeable short and long term direct and indirect effects.

### Alternative 2—Proposed Action

#### Direct and Indirect Effects

##### Botrychium minganense

Under the Proposed Action alternative short or long-term direct and indirect effects on *B. minganense* (if present) and its riparian habitat in Unit 20 are not expected because there would be no project activity within 50' of the riparian habitat (based on a riparian protection buffer) and the residual canopy closure after trees are cut elsewhere in unit 20 is expected to be at or near 60 percent. A canopy closure of 60 percent on a north-northeast facing slope, in addition to a 50' reserve buffer, should be sufficient to maintain microhabitat conditions that are within the suitable range for *B. minganense* (see Risk Assessment rationale).

##### Arabis sparsiflora v. atrorubens

The Proposed Action is not expected to have short or long-term direct or indirect effects on *A. sparsiflora v. atrorubens* because known sites are outside of the proposed project activity areas.

## Cumulative Effects of the Proposed Action

### *Botrychium minganense*

The Proposed Action is not expected to have cumulative effects on *B. minganense* in the Mill Creek Watershed because suitable habitat in Unit 20 is not likely to be directly or indirectly impacted by project activities.

### *Arabis sparsiflora v. atrorubens*

The Proposed Action is not likely to have cumulative effects on *A. sparsiflora v. atrorubens* because known sites are outside of the proposed project activity areas, and there are no foreseeable short or long-term direct or indirect effects associated with the proposed project.

## Risk Assessment

The determination of risks to populations of sensitive plants takes into consideration the size, density, vigor, habitat requirements, location of the population and habitat, and the consequence of an adverse effect on the species as a whole within its range and within the Mt. Hood National Forest.

The proposed action would have No Impact on the viability of *B. minganense* on the Mt. Hood National Forest or throughout its range because suitable habitat would not likely be adversely impacted by project activities. Throughout its range *B. minganense* appears to have wide ecological amplitude: East of the Cascades it is known to grow in open shrubland and barren slopes; known sites on the Gifford Pinchot and Mt. Baker-Snoqualmie are located in subalpine meadows and ski slopes, mossy talus slopes under bigleaf maple, in roadcuts, shrublands, and alder thickets; in the range of the northern spotted owl it typically occurs in older forest stands (Management Recommendations for Mingan moonwort, December 1998). On the Mt. Hood National Forest the species is typically associated with riparian zones under the shade of old-growth western red cedar (*Thuja plicata*), although there are 2 sites on the eastside of the Mt. Hood National Forest that grow under young vine maple in mixed-aged forest stands.

*Botrychium minganense* has been reported from 19 states and 12 Canadian provinces. It occurs primarily in northern latitudes and at high elevations to the south. It is known from Labrador to New England westward across Canada, Alaska, and the northern United States, and south through the western mountains of California and Arizona. Recently it has been found in Iceland.

As described previously, in The Dalles Watershed Fuelbreak unit 20, suitable habitat for *B. minganense* is expected to remain undisturbed within a riparian protection buffer 50' around the seep/spring habitat in the central portion of the unit. It is also expected that if unit 20 were treated as described under the Proposed Action, the residual forest canopy closure beyond the riparian protection buffer would be at or near 60%. Therefore it is predicted that the seep/spring habitat would remain within the range of variable habitat conditions that *B. minganense* colonies are known to occupy throughout their range.

The Proposed Action would have No Impact on *A. sparsiflora v. atrorubens* because known sites are outside of the proposed project activity areas and because the proposed project is not expected to have short or long term direct, indirect, or cumulative, effects on the species.

## Invasive Plant Species

A more detailed Invasive Species Report and Risk Assessment is located in the project record, located at the Hood River Ranger District. The analysis and conclusions of the report are summarized below.

### Existing Condition

Invasive non-native plants occur throughout the planning area; most notable are noxious weeds and some grass species. These plant species can inhabit and negatively alter native plant communities and ecosystems. Aggressive non-native plants or noxious weeds can invade and displace native plant communities causing long-lasting management problems. Noxious weeds can displace native vegetation, increase fire hazards, reduce the quality of recreational experiences, poison livestock, and replace both wildlife and livestock forage. By simplifying complex plant communities, weeds reduce biological diversity and threaten rare habitats.

In addition to noxious weeds, which are designated by the State, there is a group of non-native plants that are also aggressive though are not officially termed "noxious". These species populate areas throughout the district, and will be discussed where deemed appropriate.

Noxious weeds are defined by the Oregon State Weed Board "as exotic, non-indigenous, species that are injurious to public health, agriculture, recreation, wildlife or any public or private property." The following noxious weeds are identified by the Oregon Department of Agriculture (ODA) and are known to occur within or a short distance (1 mile or less) from this planning area.

<b>"B" Rated Weeds</b>	<b>"T" Rated Weeds</b>
Scotch broom ( <i>Cytisus scoparius</i> )*	Spotted knapweed ( <i>Centaurea maculosa</i> )
Diffuse knapweed ( <i>Centaurea diffusa</i> )*	Tansy ragwort ( <i>Senecio jacobaea</i> )
Spotted knapweed ( <i>Centaurea maculosa</i> )	
Tansy ragwort ( <i>Senecio jacobaea</i> )	
Yellow toadflax ( <i>Linaria vulgaris</i> )	
Canada thistle ( <i>Cirsium arvense</i> )	
Bull thistle ( <i>Cirsium vulgare</i> )	
St. Johnswort ( <i>Hypericum perforatum</i> )	

\* These species are currently being treated with herbicides on the Barlow Ranger District portion of this planning area, according to the 1998 Barlow Ranger District Noxious Weed Treatment Environmental Assessment.

A "B" rated weed has an economic importance which is regionally abundant, but which may have limited distribution in some counties and is subject to intensive control or eradication, where feasible, on a case-by-case basis. A "T" rated weed is a priority noxious weed on which ODA implements a statewide management plan.

Several non-native grass species in the planning area were introduced in commercial seed mixes used by the Forest Service for erosion control and wildlife/livestock forage uses. The following non-native grass species that are known to occur within or near (1 mile or less) of this planning area, include: orchard grass (*Dactylis glomerata*), soft brome (*Bromus mollis*), tall fescue (*Festuca arundinacea*), perennial ryegrass (*Lolium perenne*), Timothy grass (*Phleum pratense*),

meadow foxtail (*Alopecurus pratensis*), intermediate wheatgrass (*Agropyron intermedium*), and Kentucky bluegrass (*Poa pratensis*).

There are some non-native early-seral invader grass species that are also opportunistic and have established in this planning area because of past disturbance from timber sales, recreation, and livestock grazing (north of this planning area). These species thrive where bare ground is created. These species include: cheatgrass (*Bromus tectorum*), barren brome (*Bromus sterilus*), bulbous bluegrass (*Poa bulbosa*), and voodoo grass (*Ventenata dubia*). These seed mixes were used for a period of time for site restoration efforts after timber harvesting, including the revegetation of landings, slash piles, and skid trails. Some of these areas currently exhibit a monoculture of these species. Conversion of these areas to a native vegetation mix would be time-consuming and quite costly. The practice of using non-native seed mixes has not been implemented since 1993, when the Forest Service issued policy regarding the use of native plants (FSM #2470/2600, 1-7-1993).

The current noxious weed treatment program in this planning area involves the use of herbicides along Forest Roads 1720, and 4430. The species of concern for treatment has been diffuse knapweed and some isolated Scotch broom plants. This treatment has proven effective in reducing the infestation along these roads. The treatments were monitored this last season and determined that they both would need treating this upcoming field season (2007).

Field surveys were conducted inside The Dalles Municipal Watershed boundaries, along Forest Roads 1720-190, 1720-196, 1720-197, 1720-170, and 1721-012, 1721-014. All of these roads had diffuse knapweed growing along them. Some roads were more densely populated (1720-190) with knapweed than other roads (1721-012), but all of the identified roads did have at least one occurrence of knapweed.

There are several case studies on the Barlow Ranger District pertaining to noxious weed treatments that have varying levels of success. In the early 1990s, a population of toadflax was found during monitoring and it was eradicated with an active noxious weed program. Scotch broom has been documented on the old Bear Springs District in the early 1980s. Recent monitoring indicates this noxious weed is not growing in size due to manual treatments (hand pulling). In the early 1980s, houndstongue originated near the Keeps Mill seed orchard and there was no active control at that time when the infestation was small. Houndstongue now has expanded its range westward, now totaling over 214 acres.

## **Environmental Effects**

### **Alternative 1—No Action**

#### **Direct and Indirect Effects**

There would be no new ground disturbances within the planning area other than what is already occurring. The projects associated with this fuelbreak project (vegetation treatments, temporary road, skid trail and landing construction, plus prescribed fire) would not be implemented thus there would not be an increase in the cost of monitoring and treating weeds under the current noxious weed treatment program. There would be no new weed populations established or spread in the forested landscape from these activities. The rate of spread would be expected to continue at the same level.

### **Cumulative Effects of the No Action**

Past and current ground disturbing activities such as timber harvesting, road construction and maintenance, trail construction, livestock grazing, dispersed recreation, wildlife (deer/elk), Forest Service contractors, and fire suppression activities have all contributed to the establishment and spread of invasive species/noxious weeds in both The Dalles Watershed and adjacent areas to this planning area. The recreational and economic land uses (hunting, hiking, off-road vehicle use/OHV, mushroom harvesting, and firewood gathering) are also known vectors of weed seed dispersal. All these activities are likely to continue into the reasonably foreseeable future in all areas except The Dalles Watershed; however, because there would be no increase in establishment or spread from this project, no cumulative effects are expected.

### **Alternative 2—Proposed Action**

#### **Direct and Indirect Effects**

The activity of cutting trees would cause a reduction in canopy and stems, which would provide favorable light conditions for noxious weed establishment. Harvest activities including temporary road building and ripping, landing construction, and grapple piling can expose and compact soils which would provide a seedbed for noxious weed establishment. Once piles are burned soil conditions are favorable again for some weeds to get established.

The proposed action would also include a prescribed fire matrix that would identify stands/areas where prescribed fire could be utilized to help move that vegetation type to a more natural fire regime, thus more able to withstand small more frequent fires. The proposed action would likely increase the cost for both the Hood River and Barlow Ranger Districts to implement the current weed management programs, since this activity would add additional acres needing monitoring and treatment to each district's existing programs. Conceivably, 1,500 acres would become more susceptible to an invasive plant/noxious weed establishment opportunity. These new populations would be a source of seed to outside areas.

The proposed action could potentially increase the need for treatment and potentially the increased use of herbicides. There are stringent standards and guidelines in place whenever herbicides are utilized on the Barlow Ranger District according to the 1998 Barlow Ranger District Noxious Weed Treatment Environmental Assessment. The Region 6 Invasive Plant Environmental Impact Statement (2005) and the Mt. Hood National Forest Invasive Plant Environmental Impact Statement (currently in draft form) are both expected to be ready to implement by late 2007, and these analyses also identify additional standards and guidelines pertaining to the application of herbicides used anywhere on the Mt. Hood National Forest, including The Dalles Municipal Watershed.

The proposed action would potentially increase the spread of non-native grass species that are known to occur within 1 mile of this planning area. These non-native species are opportunistic and the creation of bare ground would provide for this. The general public would have access to the perimeter roads outside the watershed and wildlife are observed throughout, so vectors for seed dispersal would exist.

### **Cumulative Effects of the Proposed Action**

The potential analysis area for invasive plants/noxious weeds is as far as humans, livestock, wildlife, or vehicles range from the proposed activity. The focus of this analysis is the role of activities on the Hood River and Barlow Ranger Districts and their cumulative contribution to the introduction and spread of invasive plants/noxious weeds when added to the effects of this proposal.

Assumptions include: The U.S. Forest Service has only a slight influence on movement of humans, livestock, wildlife, or vehicles in or out of the planning area. Once a small infestation is detected, the rate of spread can be controlled. Mitigation and an active treatment program can control the rate of spread. Herbicides are the most cost effective method for controlling the spread of noxious weeds.

Anticipated activities projected within the next five years occurring within this general area outside the watershed boundary, include: annual road maintenance, trail building in the North Fork Mill area, the future timber harvest (thinning) in the North Fork Mill planning area, the Barlow Ranger District noxious weed treatment program, and the Mt. Hood National Forest invasive treatment program. Anticipated activities projected to occur within the next five years within the watershed would include the Mt. Hood National Forest invasive treatment program and any logging done by the city of The Dalles on property they own within the watershed.

All of the ground disturbing activities included in the projects listed previously would, to a certain degree, present potential opportunities for noxious weeds and/or invasive species to become established or spread. The Barlow Noxious Weed treatment program and the Mt. Hood National Forest invasive treatment program would actively reduce the populations of noxious weeds and invasive species.

### **Noxious Weed Risk Assessment**

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds recent Forest Service policy requires that decision documents must identify noxious weed control measures that would be undertaken during project implementation (FSM 2081.03, 11/29/95). The overall goal is to retain native vegetation consistent with site capability and integrated resource management objectives to suppress invasive plants and prevent their establishment and growth. This objective is intended to result in adequate protection of growing conditions for maintenance of native vegetation.

The Dalles Watershed Fuelbreak Project has a moderate risk of introducing or spreading known populations of noxious weeds. After inventory and field inspection of the proposed areas along identified roads in the fuelbreak, diffuse knapweed (*Centaurea diffusa*) is documented along some portions of Forest Roads 4430, 1700, 1700662, 1720, 1720190, 1720192, 1720193, 1721, 1721012. The roads inside the watershed boundary (1720190, 1721, & 1721012) are still rated as a moderate risk since knapweed occurs in larger quantities and are not currently being treated. All the other roads mentioned above have some knapweed in much smaller quantities along them and are also rated as a moderate risk. Forest Roads 1720 and 4430 are currently being treated with herbicides under the Barlow Ranger District's noxious weed treatment program. Weed

control measures are identified under the mitigations section of this document. The mitigation measures identified should be adequate for preventing the spread or establishment of any new noxious weed sites.

## **Heritage Resources**

A more detailed Heritage Resources Report is located in the project record, located at the Hood River Ranger District. The analysis and conclusions of the report are summarized below.

### **Existing Condition**

Heritage resource surveys were conducted on a planning area scale in preparation for numerous projects around the North Fork of Mill Creek and the South Fork of Mill Creek. These previous surveys encompassed the current proposed project. Survey methodologies were conducted in compliance with the 1994 Programmatic Agreement (PA) between Region 6 of the Forest Service, the State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP), and also meet current survey standards in compliance with the 2004 PA. The previously surveyed projects were eventually delayed in order to pursue collaborative efforts for treatment within the area, including this current proposed project. High probability areas and previously documented sites were revisited for this project in compliance with the 2004 PA. All survey methodology and findings were documented in Heritage Resource Reports 2007/060601/0001 and 2007/060601/0002.

According to the 1995 Ethnographic Study of the Mt. Hood National Forest, there are no designated traditional use areas within the proposed project area. Fieldwork by the Forest Service inter-disciplinary team has revealed that huckleberries exist in only occasional small, isolated patches throughout the area and do not offer any significant potential for enhancement. Public access within The Dalles Watershed is highly restricted by the City of The Dalles, which would also restrict access to huckleberries. The narrow nature of this project also limits opportunities for huckleberry enhancement. Future large-scale projects within the watershed may offer better opportunities for huckleberry enhancement. There are no other known traditional native plant communities within the proposed project area.

The Dog River Aqueduct (666EA0031) was initially documented in 1990 as an historic wooden pipeline constructed to transmit water from the Dog River/Meadow Creek watershed into the upper end of the South Fork of Mill Creek for eventual use downstream by the city of The Dalles. The pipeline was constructed with arched redwood slats and bound with 9.0 gauge wire. The interlocking ends of each pipe were secured with wooden band clamps. The site was revisited in 1997 and again in 2006 for this project.

The Mill Creek Ridge Lookout (661EA0057) consists of the remains of a lookout tower on the barren summit of the Mill Creek Ridge, constructed ca.1930 and destroyed in 1956. The site includes a concrete foundation, privy depressions, milled timbers and scattered artifacts. Additional structure remains possibly associated with the lookout were discovered during the revisit to this site in 2006.



The S16 Cabin (661EA0103) consists of the remains of a small cabin first noted on a 1912 Oregon National Forest Map. The site includes sawn boards, stove parts, scattered artifacts, sheet metal, and barbed wire. The site was initially documented in 1982, and revisited again in 1999. Vegetation is encroaching on the site, obscuring visibility.

The Mill Creek Ridge Quarry (666NA0198) consists of a scatter of lithic artifacts comprised of four distinct artifact clusters. The site probably dates to the Late Archaic (0 – 1,000 AD), and is indicative of hunting and tool production activities on the ridgetop. The site was documented in 1998; a subsequent visit to the site for this project was negative for additional tools, although numerous flakes were observed.

The Surveyor's Ridge Trail (666EA0246) consists of an historic hiking trail that may have originally followed a Native American trail along a ridgetop/drainage divide. Portions of the trail obliterated from past logging and road construction have been relocated. No historic blazes were encountered during the survey for this project.

The Woodgate Road (661EA0298) is an abandoned segment of an historic road. The historic road was constructed ca. 1884, and eventually obliterated and replaced by the construction of FDR 1720 around 1962. The site consists of the road alignment, trees with insulators, and a wooden gate.

The Brooks Meadow Lithic Scatter (661NA0300) consists of a sparse scatter of lithic artifacts with an indeterminate cultural affiliation. The site is situated on the edge of a wet meadow, and indicates at least intermittent use of the area by hunting/gathering groups. The site was documented in 1999; a revisit to the site for this project proved negative for additional cultural material.

The 1720 Can Dump (661EA0306) consists of a small trash deposit, probably from a single dumping event, that dates between 1880 and 1930. The site has probably been disturbed from past logging of the area and from construction of nearby roads.

The Dufur to Brooks Meadow Road (661EA0324) consists of the remains of an abandoned portion of an early wagon road constructed from Dufur to Brooks Meadow around 1914. The wagon road was probably improved to accommodate motor vehicles until the construction of Forest Development Road 1720 in 1964. Initially, only about 960 feet of the road were inspected; another 1040 feet of the road was documented during the revisit to the site for this project.

The North Section Line Trail (661EA0340) consists of an historic hiking trail that may have originally followed a Native American trail along a ridgetop/drainage divide. Portions of the trail obliterated from past logging and road construction have been relocated. Other apparently original portions of trail also include historic "candlestick" blazes that are mostly grown over.

The Hilleary Grade Telephone Line (661EA0342) consists of a series of ceramic telephone insulators following Forest Development Road 1720-190. The insulators are mounted about 15 to 20 feet high in trees along the road, and may have allowed communication between lumber mills and nearby settlers in the 1930's.

Other known sites in the vicinity will not be affected by the proposed action and do not require mitigation; thus, they are not detailed here.

## Environmental Effects

Direction for surveying for, protecting, documenting effects and consulting on heritage resources comes from various laws, regulations and policy. The most important of which are:

- **The National Historic Preservation Act (NHPA) of 1966, as amended**  
This Act requires Federal agencies to consult with American Indian Tribes, state and local groups before nonrenewable cultural resources, such as archaeological and historic structures, are damaged or destroyed. Section 106 of this act requires federal agencies to review the effects project proposals may have on the cultural resources in the analysis area.
- **36 CFR Part 800 – Protection of Historic Properties**
  - 800.1 Purposes.** (a) *Purposes of the section 106 process.* Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment on such undertakings. The procedures in this part define how Federal agencies meet these statutory responsibilities. The section 106 process seeks to accommodate historic preservation through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.
  - 800.5 Assessment of Adverse Effects.** (1) *Criteria of adverse effect.* An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

When applying the criteria of effect and adverse effect, there are three possible findings:

- **No Effect:** There is no effect of any kind, neither harmful nor beneficial, on the historic properties.
- **No Adverse Effect:** There could be an effect, but the effect would not be harmful to those characteristics that qualify the property for inclusion in the National Register.
- **Adverse Effect:** There could be an effect, and that effect could harm characteristics that qualify the property for inclusion in the National Register.

### **Alternative 1-No Action**

#### **Direct, Indirect and Cumulative Effects**

Current management would remain unchanged under this alternative. There would be no effect to heritage resources under Alternative 1, other than the natural process that are already occurring.

### **Alternative II-Proposed Action**

#### **Direct and Indirect Effects**

Potential impacts to heritage resources could result from activities associated mostly with the use of heavy machinery during the proposed commercial harvest operations and machine piling activities. Combustible heritage resources could be impacted by the proposed underburning. Additional activities associated with this project include approximately 45.31 miles of routine road maintenance that may include: brushing, ditch cleaning and shaping, culvert cleaning, gravelling, deep patching, blading and/or reshaping. Approximately 3.1 miles of Forest Development Road 1700 may be reconstructed in association with this project. The reconstruction may consist of ripping the road surface, adding aggregate, reshaping and blading the surface, and compacting the road surface. Road ripping would be no deeper than the existing aggregate surface. Ditch spoil would be deposited in previously disturbed areas. Roads may be pre-treated for invasive plants by hand removal, mowing, or chemical treatment. All of these associated activities would be limited to the existing road prisms, would only affect previously disturbed ground, and are generally accepted as having no potential to cause effects to heritage resources (Stipulations III (C) 2, 4 and 5 of the 2004 Programmatic Agreement).

Heritage Resource Reports 2006/060601/0001 and 2006/060601/0002 documented the survey methodology, findings and recommendations for archaeological resources associated with this proposed project. These reports concluded with findings of **no adverse effect** and **no effect**, respectively, for expected impacts to archaeological resources. The effect on each specific heritage site is detailed below with applicable mitigation measures to avoid these impacts. The mitigation measures have been included in the mitigations section in Chapter 2.

The Dog River Aqueduct (666EA0031) lies within an area proposed for thinning and prescribed burning. The following mitigation measures fall within the guidelines established by the Programmatic Memorandum of Agreement for Historic Water Transportation Ditches for the Wallowa-Whitman National Forest (1984), and would be applied to the Dog River Aqueduct:

- Falling and yarding of trees immediately adjacent to the aqueduct would be directionally away from the feature.
- Hand bucking and piling of slash would be the only method used within the aqueduct corridor [50 ft. from the centerline].
- There would be no skidding across the aqueduct.
- There would be no road construction or landings within 50 feet of the aqueduct.
- The crossing of Forest Development Road 1700 over the aqueduct would be flagged prior to road reconstruction.

With the application of these mitigation measures, the proposed project would have **no effect** on the Dog River Aqueduct.

A portion of the Mill Creek Ridge Lookout (661EA0057) is situated within an open area proposed for prescribed burning, while additional structural remains are situated within an area

proposed for both thinning and prescribed burning. Both portions of the site contain combustible components. The bundle of timbers within the open area would be sprayed with water or foam and protected during burning operations. A 30 meter buffer zone for the exclusion of heavy machinery was flagged around the other structural remains. Any trees harvested within the vicinity of the remains would be felled directionally away from the buffer zone. A hand or wet line would be constructed around the remains to exclude them from burning operations. With the application of these mitigation measures, the proposed project would have **no effect** on the Mill Creek Ridge Lookout.

The S16 Cabin (661EA0103) is situated within an area proposed for prescribed burning and thinning. The site contains combustible components. A 30 meter buffer zone for the exclusion of heavy machinery would be flagged around the site prior to project implementation. Any trees harvested within the vicinity of the remains would be felled directionally away from the site. A hand or wet line would be constructed around the site to exclude the combustible remains from any burning operations. No slash piles of any kind can be placed within the site boundaries. No other fire line construction is proposed in the vicinity of the site. With the application of these mitigation measures, the proposed project would have **no effect** on the S16 Cabin.

The Mill Creek Ridge Quarry (666NA0198) consists of non-combustible lithic artifacts. The site is situated within an area proposed for prescribed burning. An existing fire control line from previous prescribed burning passes around the site. Low temperature burns are generally considered to have no effect on lithic sites. No slash piles of any kind can be placed within the site boundaries. The previously constructed fire control line can be reused with no new effect to the site. A 30 meter buffer zone for the exclusion of heavy machinery would be flagged around the site prior to project implementation. Any new fire line construction would occur outside of the buffer zone. With the application of these mitigation measures, the proposed project would have **no effect** on the Mill Creek Ridge Quarry site.

The Surveyor's Ridge Trail (666EA246) consists of an historic trail alignment. Portions of the trail have been obliterated from past logging and road construction, and relocated to present locations. The trail forms the western boundary for the western portion of the proposed project. The trail would be flagged with a 25-foot wide buffer zone for the exclusion of heavy machinery prior to project implementation. The following stipulations must occur in connection with this proposal:

- Trees harvested within the buffer zone would be felled directionally away from the trail.
- Hand bucking and piling of slash would be the only method used within the buffer zone.
- There would be no skidding across the trail.
- There would be no road construction or landings within 25 feet of the aqueduct.

In addition to these precautions, the aqueduct should be sprayed with water or retardant, or a fire control line could be constructed to protect exposed portions of the aqueduct during burning operations. With these stipulations, the proposed project would have **no effect** on the Surveyor's Ridge Trail.

The Woodgate Road (661EA0298) consists of the combustible remains of a wooden gate, trees with ceramic telephone insulators, and a road alignment. The site is situated within an area proposed for thinning and prescribed burning. A 25-foot buffer zone was flagged around the site for the exclusion of heavy machinery. Any trees harvested in the vicinity of the site would be

felled directionally away from the buffer zone. A fire control line constructed by hand or with water would be placed around the combustible gate remains to exclude it from fire burning operations. Surface duff would be scraped or raked away from the base of trees with insulators to exclude them from burning operations. Hand-piled slash may be burned within the site boundaries. The low-temperature prescribed burning would otherwise have no effect on the site. With these mitigation measures, the proposed project can proceed with **no effect** to the Woodgate Road.

The Brooks Meadow Lithic Scatter (661NA0300) consists of non-combustible lithic artifacts. The site is situated within an area proposed for thinning and prescribed burning. Low temperature burns are generally considered to have no effect on lithic sites. No slash piles of any kind can be placed within the site boundaries. A 30-meter buffer zone was flagged around the site for the exclusion of heavy machinery. Any trees harvested in the vicinity of the site would be felled directionally away from the buffer zone. Any fire line construction would occur outside of the flagged buffer zone. The proposed project would have **no effect** on the Brooks Meadow Lithic Scatter.

The 1720 Can Dump (661EA306) consists of a small trash deposit, with non-combustible tin cans and glass fragments. The site is situated within an area proposed for thinning and prescribed burning. A 30-meter buffer zone would be flagged around the site for the exclusion of heavy machinery prior to project implementation. No slash piles of any kind can be placed within the site boundaries. Any trees harvested in the vicinity of the site would be felled directionally away from the buffer zone. The low temperature prescribed burning would have no effect on the remains at the site. No new fire control lines are proposed in the vicinity of the site. The proposed project would have **no effect** on the 1720 Can Dump.

The Dufur to Brooks Meadow Road (661EA0324) consists of an abandoned road segment with non-combustible features. The site is located within an area proposed for thinning and prescribed burning. A 30-meter buffer zone was flagged along the northern edge of the site for the exclusion of heavy machinery. Any trees logged in the vicinity of the buffer zone would be felled directionally away from the site. Prescribed burning may occur, but machine piling may not occur within the flagged buffer zone. Hand-piled slash may be burned within the site boundaries. No new fire control lines are proposed in the vicinity of the site. With the application of these mitigation measures, the proposed project would have **no effect** on the Dufur to Brooks Meadow Road.

The North Section Line Trail (661EA0340) consists of an historic trail alignment with blazed trees. Portions of the trail have been obliterated from past logging and road construction, and relocated to present locations. The trail has been designated a motorized trail and utilized by motorcycles for at least 10 years. The site crosses into areas proposed for thinning and prescribed burning. Low-temperature burning would have no effect on the trail. For timber harvest operations, a 25-foot wide buffer zone for the exclusion of heavy machinery is proposed for the units the trail passes through, with exceptions to the buffer only in portions of Units 60 and 70, and throughout Unit 72. The following stipulations must occur in connection with this proposal:

- Exceptions to the buffer would occur only when necessary, and in coordination with an archaeologist.

- Existing log landings, skid trails and roads can be re-used.
- Previous disruptions in the trail can be used for trail crossings.
- Any trees felled within the vicinity of the trail would be felled directionally away from the trail.
- All trees with historic blazes would be retained and protected.
- Portions of the trail obliterated and relocated from previous logging and road construction are not historic and do not warrant protective measures.
- Skid trails would be rehabilitated by smoothing berms, scarification, and scattering woody debris.
- All stumps within 100 feet of the trail would be cut to less than 6 inches in height.
- All brush piles would be located at least 100 feet from the trail.
- An interpretive sign about the trail and the project would be placed at one end of the trail.
- The portion of Unit 63 adjacent to the trail would be dropped from mechanical treatment; however, hand treatment can occur within this portion of the unit.
- Large diameter Douglas-fir, grand fir and ponderosa pine not affected by disease, root rot or dwarf mistletoe would be retained.

Although the setting of the trail may be affected in the short term, it is anticipated that the deteriorated stands surrounding the trail could eventually be rejuvenated and the historic setting and character of the trail can be restored with the completion and continued maintenance of this project. The trail tread and alignment would remain intact. With the above stipulations, the proposed project would have **no adverse effect** on the North Section Line Trail 451.

The Hilleary Grade Telephone Line (661EA0342) consists of a series of ceramic telephone insulators mounted about 15 to 20 feet high in trees along Forest Development Road 1720-190. The site lies within areas scheduled for thinning and prescribed burning. Each tree with an insulator would be flagged for protection from logging prior to project implementation. Combustible surface duff would be scraped or raked away from the base of trees with insulators. Otherwise, Low temperature burning would have no effect on the insulators. The construction of fire control lines would have no effect on the site. The proposed project would have **no effect** on the Hilleary Grade Telephone Line.

### **Cumulative Effects of the Proposed Action**

Anticipated projects in the vicinity of the Heritage Resources were considered for cumulative effects (See project record).

It is estimated that approximately half of the North Section Line Trail (661EA0340) has been obliterated from past timber harvest and road construction. The obliterated portions were relocated to their present locations. It is believed that the remaining half of the trail is relatively intact and is located within or near its original alignment and within its natural setting. These intact portions of the trail would experience some short-term effects to its setting from implementation of the proposed project. However, the setting would be restored over the long-term with skid trail rehabilitation and maintenance underburning. The trail has been maintained over several decades; continued trail maintenance would have no effect on the trail. The trail has been designated for use by motor vehicles, and is being considered for incorporation into a trail system for Off-Highway Vehicles (OHVs). Past and future use of the trail by motorcycles has

not impacted and would not impact the trail alignment, setting, or associated blazes. However, personal communication with Hood River Recreation Manager Kevin Slagle revealed that if the trail was changed to accommodate four-track vehicles, the trail would require straightening, widening and tree removal. The trail would no longer be a narrow trail winding between the trees, but would lose its historic character and setting with the widening and straightening. Although the effects of the proposed project to the historic character of the trail would be minor and would diminish through time, there could be an increased cumulative effect to the historic character, setting and alignment of the trail when the effects of the proposed project are considered together with conversion of the trail to a four-track vehicle trail.

Low-temperature underburning maintenance would continue with no effect to the resources. Treatment of invasive plants could occur with no effect to the archaeological resources. Heritage Resources would be avoided during the implementation of any other type of foreseeable projects with no indirect or direct effects. There would be **no long-term cumulative effects** to Heritage Resources.

## **Range Allotment Resources**

This proposed project planning area is not located within any active livestock grazing allotments. Historical records at the Barlow Ranger District do indicate the last time documented livestock grazing (cattle and sheep) occurred in this area was between the years 1906 to 1926. Inconclusive records do indicate that livestock grazing occurred in this area before the inception of the US Forest Service in 1906.

The closest active grazing allotment is the Long Prairie Allotment that lies directly to the north. An environmental analysis was completed on the Long Prairie Allotment in September 2005. This document outlined a plan that would construct 3 miles of new fencing to the north of the North Fork of Mill Creek. Implementation of this new fence would keep livestock north of the North Fork of Mill Creek, thus eliminating the need to maintain an existing allotment boundary fence along Forest Road 1700662, which is along the north end of the fuelbreak planning area.

The old existing boundary fence (between the Long Prairie Allotment and The Dalles Municipal Watershed) was constructed in 1993 with the idea of keeping livestock from drifting off this allotment to the south into the watershed. The design and maintenance requirements of a fence in this area have proved problematic. Almost the entire length of this fence is currently non-functioning. Blow-down of dead trees and the cost of maintenance have led to its disrepair.

Currently there is no need to maintain this fence from a range management perspective. Consideration of a boundary of some type (fence or other barrier) is likely in the near future; collaboration indicated that there is concern from The City of The Dalles to leave a barrier in place to mitigate off-highway vehicle trespass into the watershed.

## **Social Impact Analysis/Environmental Justice**

On February 11, 1994, President Clinton issued the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive

Order 12898). This order directs agencies to identify and address disproportionately high and adverse human health or environmental effects of projects on certain populations. In accordance with this order, the proposed activities have been reviewed to determine if they would result in disproportionately high and adverse human and environmental effects on minorities and low-income populations.

The communities of Hood River, Parkdale, and Odell are 5 to 20 miles to the west and northwest of The Dalles Municipal watershed. The Dalles abuts the northeast end of the municipal watershed. Other communities that may have an interest in the proposal would include Maupin, Madras, Redmond, and Bend to the south and Sandy, Gresham and Portland to the West. Census data confirm that the larger communities have minorities and low-income populations that may be affected by activities in the watershed. However, no specific concerns regarding minorities or low-income populations or communities were identified during the public information process.

The portion of The Dalles Municipal watershed that is on National Forest System lands is located on usual and accustomed land for the Confederated Tribes of Warm Springs (as is all of the Mt. Hood National Forest). The Treaty of 1855 granted the Confederated Tribes of the Warm Springs (CTWS) the right of “usual and accustomed” gathering of traditional native plants and “special interest” use. According to the Ethnographic Study of the Mt. Hood National Forest (French et al. 1995), no traditional use areas have been identified in this planning area. No activities are proposed that would preclude any granted rights. The Forest Service district archeologist examined the opportunity for huckleberry enhancement as a part of this proposal, but found that no opportunities existed because there was a lack of existing huckleberry habitat and with the understanding that the watershed is closed with limited exceptions to all forest products harvesting, including tribal members from the CTWS. Therefore, the proposal to implement fuels reduction in the watershed would not have any adverse affect on members of the CTWS.

Although there is no formal tracking system, it is evident to Mt. Hood National Forest front desk staff and special-forest product personnel that many of the foliage/greenery permits on the Forest are sold to low-income individuals and minorities. However, no permits are sold to be used within the municipal watershed on a commercial or personal use basis. The Dalles Municipal Watershed does offer permit harvesting on a limited, regulated basis; however no specific data on income or race is queried, and it is difficult to determine if these limited users fall under the protection of environmental justice or not. In addition, the fuelbreak is not expected to affect these users, as the majority of the disturbance would occur along travel routes on the perimeter of the watershed, not in areas where permit harvesting is concentrated. Therefore, the proposal to implement fuels reduction in the watershed would not have any affect on special forest product gatherers.

### **Financial Efficiency Analysis**

The value of the commercial fuelbreak units is expected to cover the cost of fuelbreak treatments in non-commercial units. Stewardship contracting allows this type of trading goods for services.